

What is claimed is:

1. A vessel stabilizing apparatus, comprising:
  - a circular tube liquid container securable to a floating vessel, the floating vessel suitable for use in a marine body;
  - a first valve on the liquid container suitable for receiving a volume of water from the marine body into the liquid container;
  - means for urging the liquid within the liquid container to spin relative to the floating vessel in order to stabilize the floating vessel within the marine body; and
  - opposing frame support members securable to the hull of a floating vessel, the frame members providing bearing connections with the liquid container forming a gimbal axis about which the liquid container may precess.
2. The vessel stabilizing apparatus of claim 1,
  - further comprising a gimbal frame for supporting the liquid container, the gimbal frame having at least one connector connected to the liquid container along an axis of rotation of the liquid container;
  - and wherein the bearing connections of the opposing frame support members are connected to the gimbal frame so that the gimbal frame may precess with the liquid container about the gimbal axis.
3. The vessel stabilizing apparatus of claim 1, wherein the means for urging the liquid to spin relative to the floating vessel comprises:
  - a mechanical motor; and
  - a drive shaft rotated by the motor, the drive shaft being operatively connected to the container in order to frictionally impart rotational movement to liquid when liquid is placed within the liquid container.
4. The vessel stabilizing apparatus of claim 1, further comprising:
  - a second valve on the liquid container for offloading the volume of water from the liquid container.

5. The vessel stabilizing apparatus of claim 1, wherein the liquid container defines a circular ring disposed within the hull of the vessel.
6. The vessel stabilizing apparatus of claim 1, wherein the means for urging the liquid to spin relative to the floating vessel comprises at least one pump for continuously circulating liquid in the liquid container.
7. A vessel stabilizing apparatus, comprising:
  - a liquid container having a rotational flow path therein, the liquid container securable to a floating vessel;
  - a motor suitable for causing rotational movement of the liquid container relative to a hull of the floating vessel, thereby causing rotational movement of a liquid within the liquid container;
  - a first frame support member disposed on the hull of the vessel for supporting the liquid container through a first bearing connection;
  - a second opposing frame support member disposed on the hull of the vessel for supporting the liquid container through a second bearing connection, the bearing connections providing a gimbal axis about which the liquid container may precess.
8. The vessel stabilizing apparatus of claim 7, further comprising:
  - a valve along the liquid container for receiving liquid into the rotational flow path of the liquid container.
9. The vessel stabilizing apparatus of claim 8:
  - further comprising a gimbal frame for supporting the liquid container, the gimbal frame having at least one connector connected to the liquid container in an axis of rotation of the liquid container;
  - and wherein the first and second bearing connections of the frame support members are connected to the gimbal frame so that the gimbal frame may precess with the liquid container.

10. The vessel stabilizing apparatus of claim 7, wherein:  
the motor defines a mechanical motor that imparts rotation to a drive shaft;  
and  
the drive shaft is operatively connected to the liquid container in order to impart rotational movement to the liquid container.
11. A method for stabilizing a floating vessel, comprising the steps of:  
providing a floating vessel with a liquid container and a motor along the hull of the floating vessel, the liquid container having a valve for receiving liquid therein, the liquid container having a first frame support member secured to the hull of the floating vessel, the first frame support member supporting the liquid container through a first bearing connection, and the liquid container having a second frame support member secured to the hull of the floating vessel, the second frame support member supporting the liquid container through a second opposing bearing connection, the first and second bearing connections providing a gimbal axis about which the liquid container may precess;  
moving the floating vessel to a desired location in a marine body while water is discharged from the liquid container;  
filling the liquid container with water from the marine body after the floating vessel has been moved to the desired location within the marine body; and  
actuating the motor in order to cause rotational movement of the water relative to the hull of the floating vessel.
12. The method of claim 11, wherein:  
the liquid container is disposed within the hull of the floating vessel;  
the motor comprises a mechanical motor having a drive shaft connected to the liquid container at a first end of the container; and  
the step of actuating the motor in order to cause rotational movement of the water relative to the hull of the floating vessel comprises rotating the liquid container relative to the hull of the floating vessel.
13. The method of claim 11, wherein:

the first and second bearing connections of the frame support members are connected to the liquid container through a gimbal frame, the gimbal frame comprising at least one connector connected to the liquid container in an axis of rotation of the liquid container to support the liquid container and to precess with the liquid container.

14. The method of claim 11, wherein:
  - the liquid container provides a circular flow path;
  - the motor comprises a pump for continuously circulating liquid in the annular ring through the valve; and
  - the step of actuating the motor in order to cause rotational movement of the water relative to the hull of the floating vessel comprises pumping liquid into the annular ring.
15. The method of claim 14, wherein:
  - the liquid container defines an annular ring disposed external to the hull of the floating vessel.
16. The method of claim 13, further comprising the step of:
  - removing water from the liquid container.
17. The method of claim 16, further comprising the step of:
  - moving the floating vessel to a new location after the liquid container has been substantially emptied of water.
18. The method of claim 11, wherein the floating vessel is a floating production, storage and offloading vessel ("FPSO").
19. The method of claim 11, wherein the floating vessel is selected from the group comprising a pleasure boat, an offshore rescue craft, a CALM buoy, a racing boat, a SPAR, an oceanographic survey vessel, and a seismic vessel.

20. The method of claim 11, wherein the floating vessel is a tanker.
21. The method of claim 20, wherein the tanker is an LNG tanker.
22. The method of claim 11, wherein the floating vessel is an offshore workboat.
23. The method of claim 22, wherein the offshore workboat is a drillship.
24. A floating vessel, comprising:
  - a hull; and
  - a hydrogyroscope, comprising:
    - a circular tube liquid container disposed along the hull of the floating vessel, the liquid container having a rotational flow path therein;
    - opposing frame support members securable to the hull of the floating vessel, the frame members providing bearing connections with the liquid container forming a gimbal axis about which the liquid container may precess; and
    - a valve along the liquid container for receiving liquid into the rotational flow path of the liquid container.
25. The floating vessel of claim 24, wherein the gimbal axis is disposed orthogonal to a major axis of the vessel.
26. The floating vessel of claim 24, wherein the gimbal axis is disposed parallel to a major axis of the vessel.
27. The floating vessel of claim 24, wherein the floating vessel comprises a pair of hydrogyroscopes in the hull of the vessel, with one hydrogyroscope being positioned to stabilize the vessel as to pitch forces, and the other hydrogyroscope being positioned to stabilize the vessel as to roll forces.

28. An active gyroscopic system for stabilizing a vessel, the vessel having a hull, the gyroscopic system comprising:

- a liquid container securable to the vessel, the liquid container having a gimbal shaft about which the liquid container rotates;

- a first mechanical motor;

- a drive shaft rotated by the motor, the drive shaft being operatively connected to the liquid container in order to frictionally impart rotational movement to liquid within the liquid container;

- opposing frame support members securable to the hull of the vessel, the frame members supporting the liquid container through the gimbal shaft;

- a first gear operably connected to the shaft of the liquid container;

- a motion sensing apparatus for sensing motion of the vessel;

- a second gear constructed and arranged to impart rotational movement to the liquid container through the first gear;

- a second mechanical motor for rotating the second gear; and

- a controller sensing motion of the gyroscope and sending a signal to the second mechanical motor to rotate the second gear in a desired direction, thereby forcing the liquid container to rotate about the gimbal shaft so as to stabilize the vessel.

29. The active gyroscopic system of claim 28, wherein the motion sensing apparatus comprises a gyroscope.

30. A vessel stabilizing apparatus, comprising:

- a circular tube liquid container securable to a floating vessel, the floating vessel suitable for use in a marine body;

- a first valve on the liquid container suitable for receiving a volume of ambient water from the marine body into the liquid container;

- a movement device for urging the liquid within the liquid container to spin relative to the floating vessel in order to stabilize the floating vessel within the marine body; and

opposing frame support members securable to the hull of a floating vessel, the frame members providing bearing connections with the liquid container forming a gimbal axis about which the liquid container may precess.

31. The vessel stabilizing apparatus of claim 30,  
further comprising a gimbal frame for supporting the liquid container, the gimbal frame having at least one connector connected to the liquid container along an axis of rotation of the liquid container;

and wherein the bearing connections of the opposing frame support members are connected to the gimbal frame so that the gimbal frame may precess with the liquid container about the gimbal axis.

32. The vessel stabilizing apparatus of claim 30, wherein the movement device comprises:

a mechanical motor; and

a drive shaft rotated by the motor, the drive shaft being operatively connected to the container in order to frictionally impart rotational movement to liquid when liquid is placed within the liquid container.

33. The vessel stabilizing apparatus of claim 30, wherein  
the liquid container defines a circular ring disposed within the hull of the vessel; and

the movement device comprises at least one pump for continuously circulating liquid in the liquid container.

34. The vessel stabilizing apparatus of claim 31, wherein the opposing frame support members are permitted to rotate within a circular plane within the hull of the vessel, whereby the vessel stabilizing apparatus may act to stabilize the vessel both as to pitch forces and as to roll forces.